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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
KADING, JOSHUA A	

ART UNIT	PAPER NUMBER
2661	

DATE MAILED: 09/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/838,145	TAKAGI, MASAHIRO	
	Examiner	Art Unit	
	Joshua Kading	2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-15 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-15 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 20 April 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 4-20-01.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The use of the trademark NETSCAPE NAVIGATOR and INTERNET EXPLORER has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5, 7, and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al. (U.S. Patent 6,034,962) in view of Lakshman et al. (U.S. Patent 6,078,564).

Regarding claim 1, Ohno discloses "a communication device using a communication protocol with data loss compensation functions provided at both an upper layer and a lower layer, comprising:

a packet storage unit configured to store a plurality of packets to be transmitted to another communication device (figure 5 shows the transmission queue with transmission packets waiting to be transmitted);

a connection identification unit configured to identify an upper layer connection to which each packet stored by the packet storage unit belongs (figure 4, elements 404 and 464 each have the function of assigning and recognizing the upper layer connection identifiers as seen in figure 6, this is supported in col. 7, lines 9-27);

a transmission state management unit configured to manage a transmission state of each upper layer connection identified by the connection identification unit (figure 8, element 802 which operates the storage queues of figure 5 in which the states of the packets are indicated as described in col. 7, lines 49-60);

a packet transmission unit configured to transmit each packet stored by the packet storage unit (figure 4, elements 408 and 468 operate as the receive/transmit points of each computer)..."

However, Ohno lacks what Lakshman discloses, "a packet transmission order control unit configured to control a transmission order among the plurality of packets to be transmitted by the packet transmission unit at the lower layer (col. 5, lines 39-43 where to schedule the transmission of packets is the equivalent to ordering the packets for transmission), according to the transmission state managed by the transmission state management unit, such that when the packet storage unit stores at least one non-transmitted packet for each one of at least two different upper layer connections, at least two packets to be transmitted by the packet transmission unit consecutively are

belonging to different upper layer connections (figure 3, where each queue is described as a per connection queue, which means that each queue is assigned to a different upper layer connection and therefore each queue will have the corresponding transmitted and non-transmitted data in each)."

It would have been obvious to one with ordinary skill in the art at the time of invention to include the packet transmission order control unit for the purpose of only transmitting data when there is sufficient bandwidth/resources to do so (Lakshman, col. 5, lines 33-43). The motivation for only transmitting data when there are sufficient resources to do so is so that data is not sent when there is not room for it on the link, possibly causing congestion or the loss of the data packet.

Although claim 11 is a method claim, all limitations of claim 11 are implemented by the corresponding components in claim 1. Therefore, claim 11 is rejected for the same reasons as those in claim 1.

Regarding claim 12, Ohno and Lakshman disclose the method as described in claim 11. However, Ohno lacks what Lakshman discloses, the method can be implemented as a program on a computer readable medium as in claim 12 (col. 6, lines 34-50 where the layer modules are programmed on the readable medium and are used in the implementation of the method described in Ohno and Lakshman). It would have been obvious to one with ordinary skill in the art at the time of invention to include the program on the computer readable medium for the purpose of implementing the method

of claim 11. The motivation for using a computer program to implement a method dealing with digital data is that the computer program is the only efficient way to execute the method.

Regarding claim 2, Ohno and Lakshman disclose the device of claim 1. However, Lakshman lacks what Ohno further discloses, "the upper layer is a transport layer (col. 7, lines 18-24 where the TCP/UDP identifier indicates a transport layer) and the lower layer is a link layer (col. 6, lines 62-64)." It would have been obvious to one with ordinary skill in the art to have the upper layer consist of a transport layer and the lower layer to consist of a link layer for the same reasons and motivation as in claim 1.

Regarding claim 3, Ohno and Lakshman disclose the device of claim 1. However, Ohno lacks what Lakshman further discloses, "the packet transmission unit transmits the plurality of packets through an unstable channel in which an effective bandwidth varies (col. 5, lines 35-39 where it is implied that the channels used for communication are of a varying bandwidth type)." It would have been obvious to one with ordinary skill in the art to have the varying bandwidth for the same reasons and motivation as in claim 1.

Regarding claim 5, Ohno and Lakshman disclose the device of claim 1. However, Lakshman lacks what Ohno further discloses, "the transmission state management unit manages the transmission state that indicates whether a packet belonging to each

upper layer connection has been transmitted before or not, with respect to each upper layer connection (col. 7, lines 49-60 where it is clearly indicated that the data in the queue is classified as being transmitted or not yet transmitted, i.e. the transmission waiting state)." It would have been obvious to one with ordinary skill in the art to include the indication of whether or not a piece of data has been transmitted yet or not for the same reasons and motivation as in claim 1.

Regarding claim 7, Ohno and Lakshman disclose the device of claim 7. However, Lakshman lacks what Ohno further discloses, "the packet transmission order control unit selects a packet belonging to an upper layer connection whose packets have not been transmitted before according to the transmission state managed by the transmission state management unit, as a next transmission packet (col. 7, lines 49-60 where it is clearly indicated that the data in the queue is classified as being transmitted or not yet transmitted, i.e. the transmission waiting state; further data that is next in the queue will always be in a waiting state by the very nature of the queue, thus choosing as a next transmission packet a packet that is in a waiting state is obvious because of the structure of a queue)." It would have been obvious to one with ordinary skill in the art to have the next packet for transmission be a non-transmitted packet for the same reasons and motivation as in claim 5.

Regarding claim 9, Ohno and Lakshman disclose the device of claim 1. However, Lakshman lacks what Ohno further discloses, "an interface connected to the another

communication device, through which packets are transmitted/received to/from the another communication device (figure 4, elements 408 and 468)." It would have been obvious to one with ordinary skill in the art to include the interfaces for the same reasons and motivation as in claim 1.

Regarding claim 10, Ohno and Lakshman disclose the device of claim 1. However, Lakshman lacks what Ohno further discloses, "a first interface connected to a prescribed network (figure 4, element 408); a second interface connected to the another communication device (figure 4, element 468); and a relay unit configured to receive packets from a terminal on the network through the first interface and transmit received packets to the another communication device through the second interface (figure 4, element 430 where it is inherent that a network have relay devices such as switches and routers to move the data along to its final destination)." It would have been obvious to one with ordinary skill in the art to include the interfaces and relay device for the same reasons and motivation as in claim 1.

Regarding claim 13, Ohno discloses "a communication device using a communication protocol with data loss compensation functions provided at both an upper layer and a lower layer, comprising:

a packet storage unit configured to store a plurality of packets to be transmitted to another communication device (figure 5 shows the transmission queue with transmission packets waiting to be transmitted);

a connection identification unit configured to identify an upper layer connection to which each packet stored by the packet storage unit belongs (figure 4, elements 404 and 464 each have the function of assigning and recognizing the upper layer connection identifiers as seen in figure 6, this is supported in col. 7, lines 9-27);

a transmission state management unit configured to manage a transmission state of each upper layer connection identified by the connection identification unit (figure 8, element 802 which operates the storage queues of figure 5 in which the states of the packets are indicated as described in col. 7, lines 49-60);

a packet transmission unit configured to transmit each packet stored by the packet storage unit (figure 4, elements 408 and 468 operate as the receive/transmit points of each computer)..."

However, Ohno lacks what Lakshman discloses, "a packet transmission order control unit configured to control a transmission order among the plurality of packets stored in the packet storage unit, at the lower layer (col. 5, lines 39-43 where to schedule the transmission of packets is the equivalent to ordering the packets for transmission), according to the transmission state managed by the transmission state management unit, such that a level of continuity of packets belonging to each upper layer connection in the transmission order becomes not higher than a level of continuity of packets belonging to each upper layer connection in a storing order by which the plurality of packets are stored in the packet storage unlit (figure 3, where each queue has a given number of spaces to store the packets and each packet is part of a given

transmission order based on several factors, thus there will always be a continuity between the stored packets and the transmission order of the packets)."

It would have been obvious to one with ordinary skill in the art at the time of invention to include the packet transmission order control unit for the purpose of only transmitting data when there is sufficient bandwidth/resources to do so (Lakshman, col. 5, lines 33-43). The motivation for only transmitting data when there are sufficient resources to do so is so that data is not sent when there is not room for it on the link, possibly causing congestion or the loss of the data packet."

Claims 4, 6, 8, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al. and Lakshman et al. as applied to claims 1, 3, 5, and 13 above, and further in view of Ghani et al. (U.S. Patent 6,215,769 B1).

Regarding claim 4, Ohno and Lakshman disclose the device of claim 3. However, Ohno and Lakshman lack what Ghani further discloses, "the packet transmission order control unit controls the transmission order such that the unstable channel is utilized by a plurality of upper layer connections evenly (col. 10, lines 45-48 where the idea of "fairness among flows" is away to utilize the upper layer connections evenly in the system)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the utilization of the upper layer connections evenly for the purpose of providing fairness amongst the flows and not having to implement substantial buffering or scheduling techniques. The motivation for reducing the buffering and

scheduling techniques and promoting fairness amongst the flows is to reducing processing time during transmission so data will "get through" in less time.

Regarding claim 6, Ohno and Lakshman disclose the device of claim 5. However, Ohno and Lakshman lack what Ghani discloses, "the packet transmission order control unit resets the transmission state of each upper layer connection managed in the transmission state management unlit (col. 11, lines 44-50) when the packet storage unit stores at least one non-transmitted packet for each one of at least two different upper layer connections (col. 11, lines 44-50 where the queues that the packets are stored in contain non-transmitted packets) and there is no upper layer connection whose packets have not been transmitted before among upper layer connections identified by the connection identification unlit, at a time of selecting a next transmission packet (col. 11, lines 44-50 where the packets are transmitted in response to the receipt of new data, and as they wait in the queue there is a timer set to indicate when they are to be transmitted, after transmission the timer is reset for the next packet)." It would have been obvious to one with ordinary skill in the art at the time of invention to include a way to reset the transmission state of a connection for the purpose of having a way to control the admission of data to a network. The motivation for controlling the admission to a network is to avoid or ease congestion on the link (Ghani, col. 11, lines 41-43).

Regarding claim 8, Ohno and Lakshman disclose the device of claim 1. However, Ohno and Lakshman lack what Ghani discloses, "an upper layer congestion control unlit

configured to control a start of a congestion control at the upper layer according to an amount of packets stored in the packet storage unit (col. 11, lines 38-50 where the timer variable is used by the process 510 of figure 5 to ease congestion on a link)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the congestion control unit for the purpose of controlling the admission of data to the network. The motivation for controlling the admission of data to a network is to avoid and ease congestion on the network links (Ghani, col. 11, lines 41-43).

Regarding claim 14, Ohno and Lakshman disclose the device of claim 13. However, Ohno and Lakshman lack what Ghani discloses, "the data loss compensation function provided at the lower layer is dynamically adapted to a level of data loss (col. 9, lines 36-50 where the compensation function is dynamic in that it changes the emission rate based on the congestion rate, i.e. the emission rate is based on a data loss level)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the dynamic compensation function for the purpose of effectively controlling admission of data to the network. The motivation for controlling admission to the network is to avoid and ease congestion on the network links (Ghani, col. 9, lines 46-50 and col. 11, lines 41-43).

Regarding claim 15, Ohno and Lakshman disclose the device of claim 13. However, Ohno and Lakshman lack what Ghani discloses, "an upper layer congestion control unit configured to control a start of a congestion control at the upper layer

according to an amount of packets stored in the packet storage unlit, by marking or discarding upper layer packets selectively (col. 9, lines 36-50 where it is known in the art that when a queue is full, packets that are sent to the queue become lost or discarded because there is no place else for them to go, this will thusly initiate a congestion control response as described)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the congestion control unit for the purpose of controlling the admission of data to the network. The motivation for controlling admission to the network is to avoid and ease congestion on the network links (Ghani, col. 9, lines 46-50 and col. 11, lines 41-43).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Kading whose telephone number is (571) 272-3070. The examiner can normally be reached on M-F: 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Olms can be reached on (571) 272-3079. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joshua Kading
Examiner
Art Unit 2661

September 2, 2004

KENNETH VANDERPUYE
PRIMARY EXAMINER